UNITED
NATIONS

Framework Convention on Climate Change

Distr
GENERAL

FCCC/IDR.1(SUM)/DNK
4 April 1997

Original: ENGLISH

SUMMARY

of the

REPORT OF THE IN-DEPTH REVIEW OF THE NATIONAL COMMUNICATION

of

DENMARK

(The full text of the report (in English only) is contained in document FCCC/IDR.1/DNK)

Review team:

Liu Deshun, China
Gábor Vattai, Hungary
Marco Venanzi, Italy
Bo Lim, OECD secretariat
Aniket Ghai, UNFCCC secretariat
Jacob Swager, UNFCCC secretariat, Coordinator

Also available on the World Wide Web (http://www.unfccc.de)

GE.97- 60850

Summary[1]

1. The in-depth review of the first national communication of Denmark was carried out between August 1995 and June 1996 and included a country visit by the review team to Copenhagen from 14 to 18 August 1995. The team included experts from China, Hungary, Italy and the secretariat of the Organisation for Economic Co-operation and Development (OECD).

2. The commitment to pursue greenhouse gas mitigation was first formulated by the Danish Government in *Our Common Future, the Danish Government's Action Plan on Environment and Development (Follow-up to the Recommendations in the Report of the World Commission on Environment and Development and the UN Environmental Perspective to the Year 2000)* (1988) (referred to in this document as the Danish Government's Action Plan on Environment and Development of 1988) which was drafted as a national follow-up to the report of the Brundtland Commission. In this report, the goal of achieving sustainable development, locally and globally, was introduced as a general principle which should be applied in all political and administrative sectors, and ultimately, the society as a whole. Hence, responsibility for implementing climate-related policies and measures lies with individual sectoral ministries. The Ministry of Environment and Energy, and its agencies, however, has the task of aggregating the effect of sectoral policies and their projections and determining implications for national targets related to total national carbon dioxide (CO_2) emissions. Denmark has special experience in having merged the energy and environment ministries, which, in the team's opinion, has contributed to improving the coordination of policies related to climate change. In 1990, per capita emissions of CO_2 were approximately 10.3 tonnes, compared to an average of about 12 tonnes in the OECD countries.

3. The inventory in the national communication is based chiefly on the CORINAIR2 methodology, but also draws in places on the Intergovernmental Panel on Climate Change (IPCC) defaults. Denmark has applied a correction for the trade of electricity to its inventory data. For the base year 1990, emission data were corrected for a net import of electricity, with all six greenhouse gases (GHGs) being affected. The adjustments are based upon the assumption that this amount of electricity would have been generated in Denmark, if the import had not occurred. An emission is calculated as if the net amount of electricity imported was produced under average conditions in Danish coal-fired power plants. The team noted that the correction for import/export of electricity is indicated in the communication in a transparent manner. Although the method of calculation was not

---

[1] In accordance with decision 2/CP.1 of the Conference of the Parties, the full draft of this report was communicated to the Government of Denmark, which had no further comments.

[2] CORINAIR is the component of the European Community's CORINE (Coordinated Information System on the State of Natural Resources and the Environment) dealing with air emissions inventories.

transparent in the communication, it was clearly explained to the review team during the country visit.

4. Fuel combustion is the dominant source of CO_2 emissions. These arise mainly in the energy and transformation industries. The correction for electricity trade amounts to approximately 11 per cent of total gross CO_2 emissions in 1990, which totalled 58,400 Gg. Carbon sequestration from land-use change and forestry was estimated to be about 2,600 Gg of CO_2. Owing to the poor quality of associated statistics, the value is reported, but not included in the national total of CO_2 emissions. Anthropogenic emissions of methane (CH_4) in 1990 amounted to 406.3 kilotonnes, with 64 per cent occurring in the agricultural sector and 30 per cent from waste. Agricultural soils constitute the single largest source of anthropogenic emissions of nitrous oxide (N_2O), contributing 81 per cent of the total of 10.5 kilotonnes in 1990.

5. A number of targets are mentioned in the national communication. The "Energy 2000" plan issued in 1990 foresees a reduction in CO_2 emissions of 28 per cent in 2005 compared to 1988 levels, for the whole of the energy sector excluding transport. The transport action plan of 1990 aims at stabilizing CO_2 emissions at the 1990 level in 2005 and then reducing them by 25 per cent by 2030. The combined effect of the two action plans is expected to be a reduction of more than 20 per cent of CO_2 in 2005, compared to 1988 levels. This 20 per cent target was subsequently adopted by the Danish parliament. The team noted that these targets were specified in terms of emissions corrected for import and export of electricity and climate variation, included international air traffic, but did not include emissions from marine bunkers and flaring.

6. Since the first oil price shock in 1973, policies have been implemented in Denmark to reduce energy consumption. By 1988, substantial energy savings and efficiency gains had been achieved, in particular in the heating of dwellings. Since 1990, energy policy has had a strong emphasis on the reduction of CO_2 emissions, mainly through increased efficiency in the end-use of energy, increased overall efficiency of the supply and conversion systems, and use of cleaner fuels and energy sources, including renewable energy sources. The range of policies and measures implemented by Denmark is not restricted to "no regrets" measures; at present, the maximum permissible cost of CO_2 reduction stands at DKr 210 per tonne of CO_2.

7. Energy and carbon taxes on fossil fuels and on electricity have been applied in Denmark for a long time. Broad exemptions have, until recently, insulated domestic industry and services from possible negative impacts on international competitiveness, with households and the public sector facing the highest effective tax rates. Electricity grids are divided into two parts, the eastern part linked to Scandinavia and the western part to the European mainland. Direct current (DC) connections exist from the western area to Norway and Sweden, and from the eastern area to Sweden and Germany. A DC connection between the two parts is planned on the Great Belt bridge, which is under construction. Electricity produced in these two independent markets is subject to a carbon tax, and, for households, an energy tax. Two new thermal power plants are under construction, which are much more

efficient than the older ones. Exploration for natural gas began in the 1970s, and the gas was first used in the 1980s. The objective is to connect as many consumers as possible within the areas covered by the grid. Local and regional heating plans during the 1980s aimed, where feasible, at the establishment or enlargement of natural gas or district heating grids, which resulted in a large expansion of the areas covered by one or the other of these supply options. Almost all grids for natural gas and district heating are in place, although not all households are connected. Some municipalities have used the option identified in national legislation of making connection compulsory when major parts of the existing heat installation need replacement, or at the latest after nine years. In general, there is a ban on the establishment of electrical heating in areas supplied by gas or district heating. By the year 2005, only 10 per cent of households will remain to be connected within district heating areas, and 30 per cent will remain to be connected to gas in gas areas. A number of measures to promote the use of renewable energy are in place, including subsidies of up to 30 per cent on initial investments, funded, to some extent, by revenues from carbon and energy taxes.

8. The public transport system is well developed, but the number of private cars is increasing, possibly because of the economic upturn. The team was impressed with the high use of bicycles and the road infrastructure for exclusive use by cyclists. A gasoline and diesel tax was introduced as a result of a decision taken in 1992. A CO_2 excise duty on gasoline was introduced in May 1993 and stands at an average of about 27 ore/litre. The construction of bridges is planned to connect the domestic transport system and to link Denmark to Sweden and Germany, across the Great Belt, Øresund and the Femern Belt, respectively. These bridges could succeed in diverting traffic to rail, but may have negative effects too, depending, *inter alia*, on the relative prices of ferries compared to tolls on the bridges. Waste management is covered in the action plan 1993-1997, in which targets are set to reduce the overall amount of waste, to reduce the amount of waste entering landfills to 21 per cent of the total amount of waste, to reduce waste incineration to 25 per cent and to recycle 54 per cent of total waste.

9. The national communication includes projections for emissions of CO_2, CH_4, N_2O, carbon monoxide (CO), nitrogen oxides (NO_x) and non-methane volatile organic compounds (NMVOCs) up to the year 2000, on a gas-by-gas basis, disaggregated by sector, as recommended in the guidelines. Data for the year 2005 are also provided. Removals of CO_2 by sinks are included in the projections, but listed separately. Although the coverage of GHGs is comprehensive, based on the communication alone, the projections analysis was not completely transparent; it was possible, however, to gain a qualitative understanding of the different models used. During the in-depth review, the Government made every effort possible to provide supplementary information, enabling the team to gain a better insight into the projection methodologies and the key parameters used in the analysis.

10. Updated projection information presented to the team during the visit indicates that CO_2 emissions in 2000, corrected for electricity trade and with the implemented or planned measures, are expected to be 10 per cent lower than electricity-trade corrected 1990 levels, and 15 per cent lower in 2005. If the projection for the trade-corrected emissions were to be

realized, actual emissions in 2000 and 2005 would be lower or higher according to whether the fluctuating trade would result in import or export of electricity in those years. If electricity trade continues to follow the pattern observed from 1975 to 1993, the most likely level will be about 2.5 megatonnes below the trade-corrected level. Actual emissions in 2000 and 2005 would then be respectively about 4 per cent and 10 per cent below actual 1990 emissions, ± 5 per cent. The team was informed that, in general, policies and measures in the energy sector are being implemented as planned, with the exception of two measures accounting together for 3 per cent of the anticipated CO_2 emission reductions by 2005. The missing reduction in 2005 compared to the target of 20 per cent reduction for energy including transport is mainly due to the projected inability of the transport sector, with the measures implemented presently, to meet its target of stabilizing at 1988 levels in 2005. Projected CO_2 emissions in this sector in 2000 are 5 per cent higher than 1990 levels, and 11 per cent higher in 2005. CH_4 emissions are projected to decrease by 13 per cent in 2000 compared to 1990 levels. N_2O emissions are projected to increase by about 10 per cent in 2000 compared to 1990 levels.

11. The national communication followed recommendations for reporting on expected impacts of climate change contained in the Intergovernmental Negotiating Committee guidelines. While Denmark has a long coastline and harbours and low-lying areas are regarded as vulnerable, it was felt that the impacts of sealevel rise could be controlled by management. There is no specific discussion of adaptation measures under way in the Danish national communication, although *possible* adaptation measures, such as the construction in the future of higher dykes, are mentioned in the context of expected impacts of climate change.

12. Denmark participates actively in international cooperation. Its official development assistance (ODA) in 1994 stood at 1.01 per cent of its gross domestic product (GDP). Denmark contributed US$ 22.8 million to the core fund of the pilot phase of the Global Environment Facility and US$ 35.1 million to its replenishment. Considerable support is also provided to the United Nations Environment Programme (UNEP) on various climate change activities. Denmark would need an agreed definition of transfer of technology before including information on that matter in its communication. During the country visit, however, the team found evidence of flows of technology to developed and developing countries alike, including the export of Danish windmills.

13. The team was satisfied that the recommendations of the guidelines for reporting on research and systematic observation were met. There is a long tradition of research in Denmark, especially in meteorology, with current efforts being well integrated into international activities. Although there is no specific section or chapter in the national communication devoted to education, training and public awareness, a number of examples of this are mentioned in the sections on policies and measures, which were complemented by additional information provided during the country visit.